Nutrient Pollution

Background, Litigation, Nutrient Reduction Strategy

Wyoming Nutrient Work Group

March 11, 2014

Outline

- Background on Nutrient Pollution
- History and Litigation
- Nutrient Reduction Strategy
- State Performance Measures
- Stakeholder Group

Nutrients and Aquatic Ecosystems

- Nutrients (nitrogen and phosphorus) are essential to healthy aquatic ecosystems (streams, lakes, wetlands)

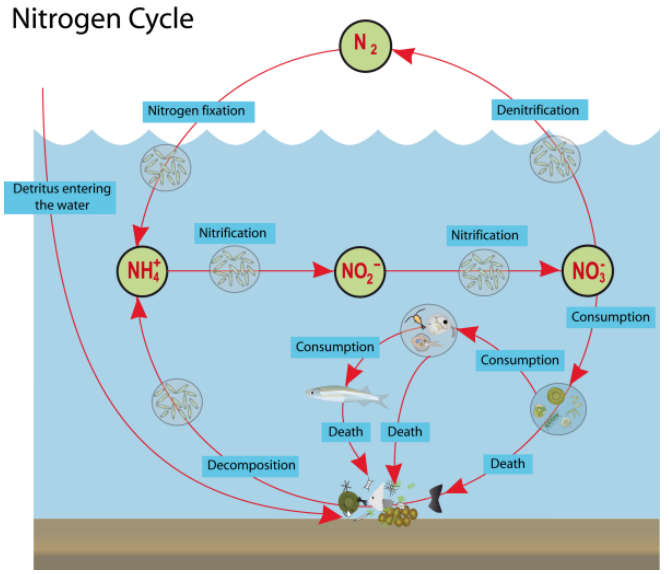
<u>Total Nitrogen</u>

Nitrate Nitrogen (NO_3^-)

Nitrite Nitrogen (NO_2^-)

Ammonia Nitrogen (NH_3, NH_4^+)

Organic Nitrogen

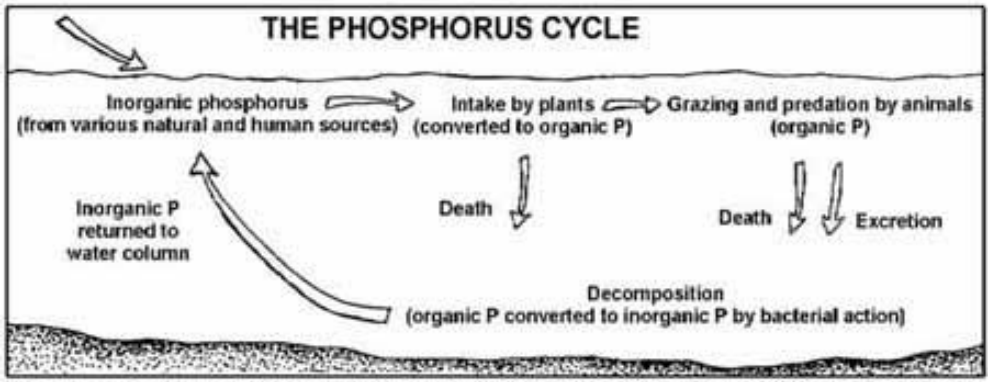


<u>Total Phosphorus</u>

All forms

Inorganic Phosphate (PO_4^{3-})

Organic Phosphate (PO_4^{3-})



Nutrients and Aquatic Ecosystems

- Excessive nutrients , however, can cause excessive growth of aquatic plants and algae (algal blooms)
  - Oxygen depletion
  - Elevated pH
  - Fish kills
  - Decline in aquatic resources, aesthetics
  - Harmful algal blooms (can produce nuerotoxins, impact use of water for drinking water, recreation, and livestock)

Nutrients and Aquatic Ecosystems

Nutrients and Aquatic Ecosystems

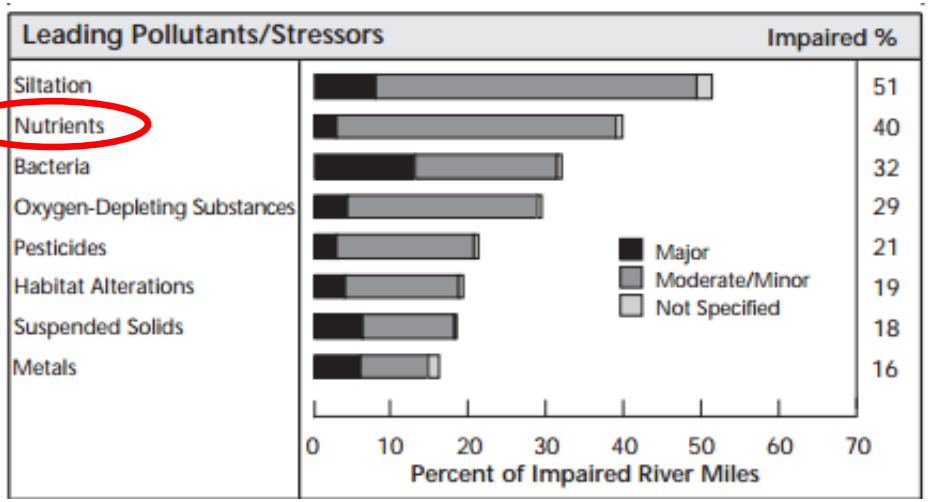
Nutrients and Designated Uses

- Nutrient pollution has the potential to impact many of Wyoming's designated uses
- Designated uses in Wyoming: agriculture, fisheries, industry, drinking water, recreation, scenic value, aquatic life other than fish, wildlife and fish consumption
- Surface water classifications of Wyoming's waters (i.e., Class 1, 2, 3, 4) are based on designated uses

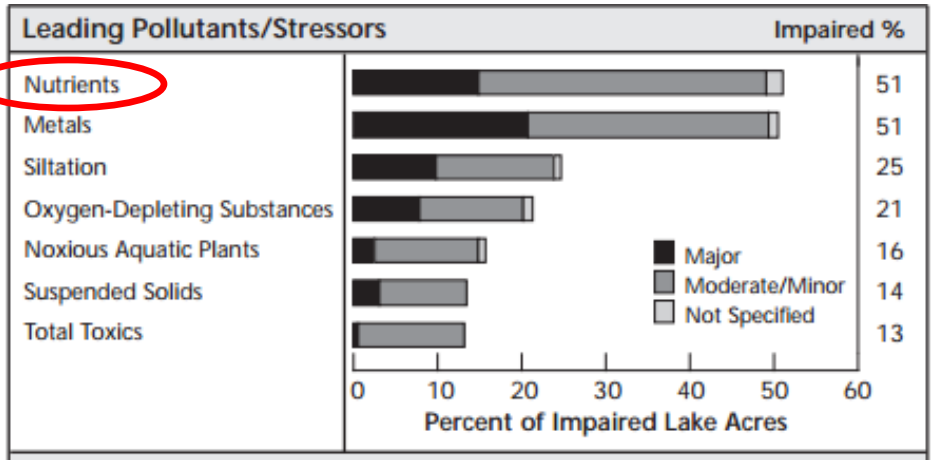
Nutrient Pollution History

1996: In National Water Quality Inventory Report to Congress, EPA reported that nutrients were among the leading causes of water quality impairments in the U.S.

Streams and Rivers



Lakes and Reservoirs



http://water.epa.gov/lawsregs/guidance/cwa/305b/96report_index.cfm

Nutrient Pollution History

National Summary
Causes of Impairment in Assessed Rivers and Streams

Description of this table

Cause of Impairment Group	Miles Threatened or Impaired
Pathogens	160,041
Sediment	124,844
Nutrients	99,408
Organic Enrichment/Oxygen Depletion	85,464
Polychlorinated Biphenyls (PCBs)	78,332

National Summary
Causes of Impairment in Assessed Lakes, Reservoirs, and Ponds

Description of this table

Cause of Impairment Group	Acres Threatened or Impaired
Mercury	7,557,195
Nutrients	3,106,249
Polychlorinated Biphenyls (PCBs)	2,848,252
Turbidity	1,467,234
Organic Enrichment/Oxygen Depletion	1,376,381

March 2014: http://iaspub.epa.gov/waters10/attains_nation_cy.control#status_of_data

Nutrient Pollution History

1997: EPA initiated Clean Water Act Plan (CWAP) to address excess nutrients in the nation's surface waters. CWAP included development of numeric criteria as a component.

- Due to natural variability and complexity of nutrients, most states have used narrative water quality standards to protect designated uses from nutrient pollution
- Numeric criteria, however, for both causal parameters (TN and TP) and response parameters (e.g., chlorophyll a) are expected to more effectively protect waters from nutrient pollution:
  - Incorporated into discharge permits
  - Used to develop Total Maximum Daily Loads (TMDLs)
  - Used to assess waters for impairment
  - Used to facilitate watershed protection and restoration

Nutrient Pollution History

1998: In June, EPA released *National Strategy for Development of Regional Nutrient Criteria*. Set goal for states to adopt nutrient criteria by end of 2003. Established Regional Nutrient Teams.

00-01: EPA published 304(a) criteria for nutrients by water body type for 14 major ecoregions of the U.S. Were guidance that states and tribes could use as a starting point for criteria.

- In most instances, Wyoming adopts EPA recommended criteria (e.g., metals, *E. coli,* ammonia)
- EPA's nutrient criteria are based on reference data within nutrient ecoregions, so are very stringent
- Most states have not adopted these criteria

Nutrient Pollution History

2001: In January, EPA published a Federal Register Notice that recommended that states and tribes develop nutrient criteria plans (how and when they would adopt nutrient criteria). States should adopt plans by the end of 2001 and adopt criteria by 2004.

2001: In November, EPA sent states a memo providing additional guidance on developing plans, flexibility, new timeframes for plan development and criteria adoption.

2008: In April, DEQ, with assistance of TetraTech, published *Wyoming Nutrient Criteria Development Plan*

Nutrient Criteria Development Plan

WYOMING

NUTRIENT CRITERIA DEVELOPMENT PLAN

Final

April 4, 2008

Prepared by

Wyoming
Department of Environmental Quality

and

Tetra Tech, Inc.
400 Red Brook Blvd., Suite 200
Owings Mills, MD 21117

6.0 SCHEDULE OF NUTRIENT CRITERIA DEVELOPMENT

6.1 Schedule and Milestones for Lakes and Reservoirs

2008-2010

- Inventory of existing lake and reservoir data
- Data compilation into integrated database
- Literature review for lake and reservoir nutrient criteria

2011

- Analysis of existing lake and reservoir data
- Design and implementation of additional data collection for lakes and reservoirs

2012

- Additional lake and reservoir sampling

2013

- Develop proposed lake and reservoir nutrient criteria

2015

- Stakeholder Review of Lake and Reservoir Nutrient Criteria

6.2 Schedule and Milestones for Streams and Rivers

2008-2010

- Inventory of existing data
- Data compilation into an integrated database
- Ongoing sampling of streams and rivers

2011

- Continue sampling of streams and rivers
- Analysis of existing data
- Design and implementation of supplemental data collection

2012

- Continue sampling of streams and rivers
- Evaluation of other stream and river classes (large rivers)
- Design and implementation, if needed, of sampling program for other stream and river classes

2012–2013

- Continue sampling of streams and rivers

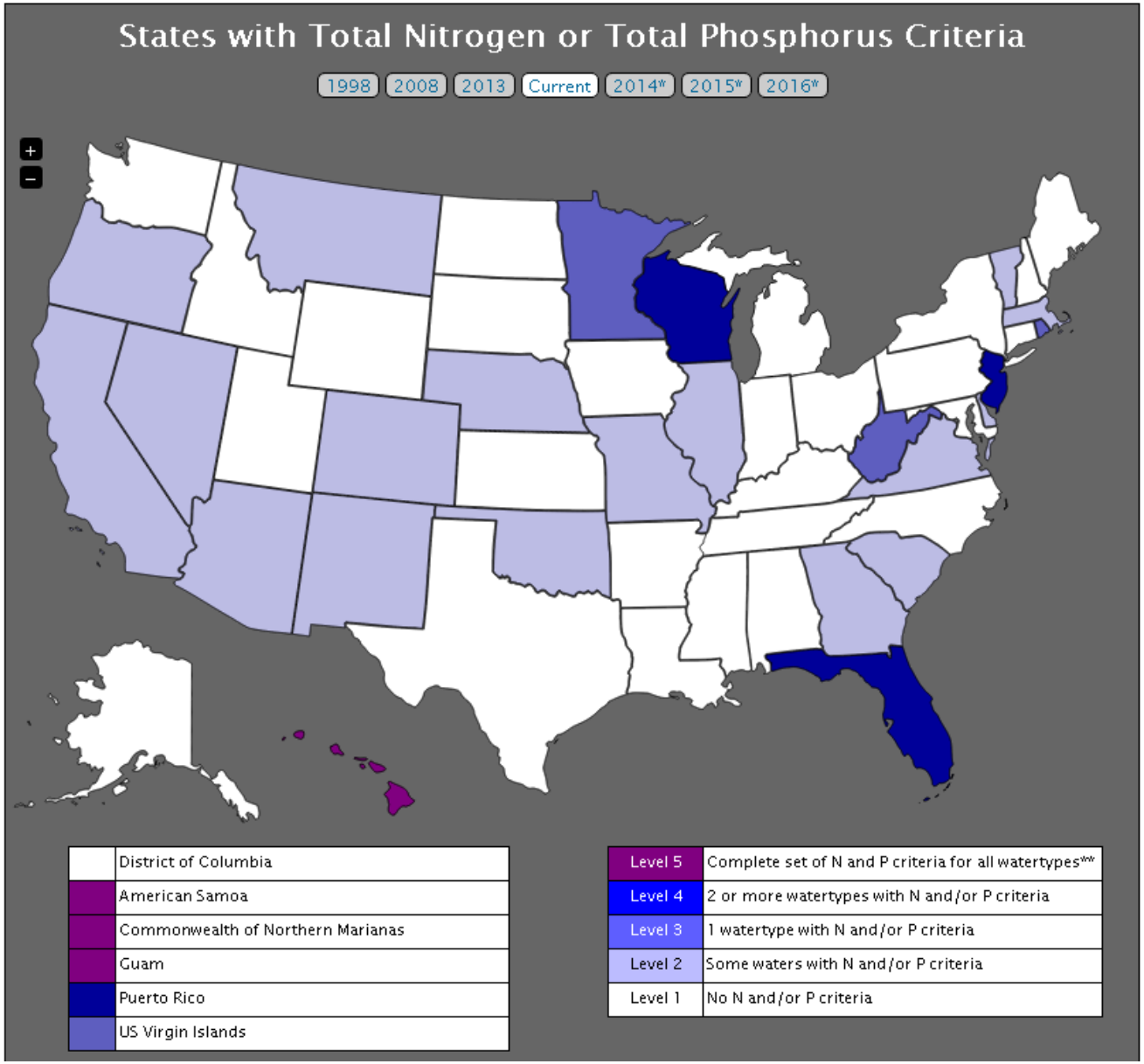
2014

- Develop proposed nutrient criteria for wadeable streams and rivers

2015

- Stakeholder review of nutrient criteria for wadeable streams and rivers
- Continued sampling as needed

National Status of Nutrient Criteria



March 2014

Nutrient Litigation - Florida

2008: Florida Wildlife Federation sued EPA to promulgate numeric nutrient standards for Florida waters (narrative insufficient).

2009: In Jan., EPA determined that numeric criteria were necessary to meet the requirements of the Clean Water Act and EPA intended to propose numeric nutrient standards.

2009: EPA entered consent decree within FWF. Committed to propose criteria in Jan. 2010 (lakes, streams) and Jan. 2011 (coastal, estuaries).

2010: In Nov., EPA released final numeric nutrient criteria rule (lakes, streams).

Nutrient Litigation - Florida

2011: In Apr, Florida petitioned EPA to give criteria development back to state and moved forward with its own rulemaking (some waters).

2012: In Nov, EPA approved Florida's numeric criteria for some waters and proposed criteria for some coastal, estuaries. Amended 2009 determination (some waters).

2013: In Jun., EPA, Florida agree to let Florida set/implement criteria. EPA to withdraw criteria. EPA amended 2009 determination (fresh waters).

2014: In Jan., District Court paved way for EPA to withdraw their criteria and modify the consent decree. FWF disagreed.

Nutrient Pollution History

2009: In Aug., Office of Inspector General Report *EPA Needs to Accelerate Adoption of Numeric Nutrient Water Quality Standards*

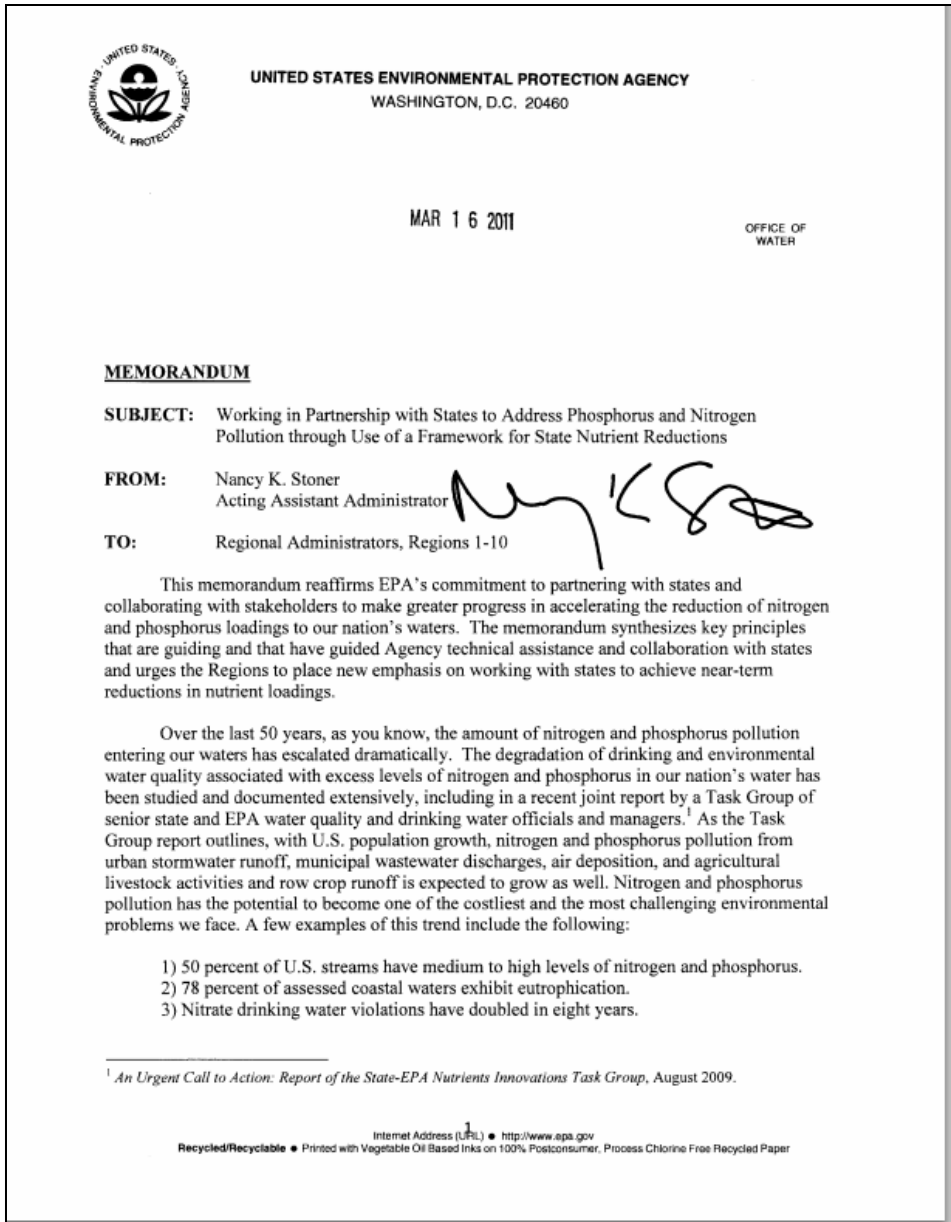
2009: EPA issued an *Urgent Call to Action* to address nutrient pollution

2010: EPA Administrator Jackson identified nutrients as a priority

2011: EPA Acting Administrator for Water issued a memo *Working in Partnership with States* to Reduce Nutrient Pollution

2011 EPA Framework Memo

- Gives states flexibility to achieve near-term reductions while working on criteria
- Criteria for a category of waters by 2016
- Results oriented: build from existing state work, but accelerate progress and demonstrate results
- Encourage collaborative approach between federal, state, local partners and other stakeholders



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 16 2011

OFFICE OF WATER

MEMORANDUM

SUBJECT: Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions

FROM: Nancy K. Stoner
Acting Assistant Administrator

TO: Regional Administrators, Regions 1-10

This memorandum reaffirms EPA's commitment to partnering with states and collaborating with stakeholders to make greater progress in accelerating the reduction of nitrogen and phosphorus loadings to our nation's waters. The memorandum synthesizes key principles that are guiding and that have guided Agency technical assistance and collaboration with states and urges the Regions to place new emphasis on working with states to achieve near-term reductions in nutrient loadings.

Over the last 50 years, as you know, the amount of nitrogen and phosphorus pollution entering our waters has escalated dramatically. The degradation of drinking and environmental water quality associated with excess levels of nitrogen and phosphorus in our nation's water has been studied and documented extensively, including in a recent joint report by a Task Group of senior state and EPA water quality and drinking water officials and managers.[1] As the Task Group report outlines, with U.S. population growth, nitrogen and phosphorus pollution from urban stormwater runoff, municipal wastewater discharges, air deposition, and agricultural livestock activities and row crop runoff is expected to grow as well. Nitrogen and phosphorus pollution has the potential to become one of the costliest and the most challenging environmental problems we face. A few examples of this trend include the following:

1) 50 percent of U.S. streams have medium to high levels of nitrogen and phosphorus.
2) 78 percent of assessed coastal waters exhibit eutrophication.
3) Nitrate drinking water violations have doubled in eight years.

[1] *An Urgent Call to Action: Report of the State-EPA Nutrients Innovations Task Group*, August 2009.

Nutrient Reduction Strategy

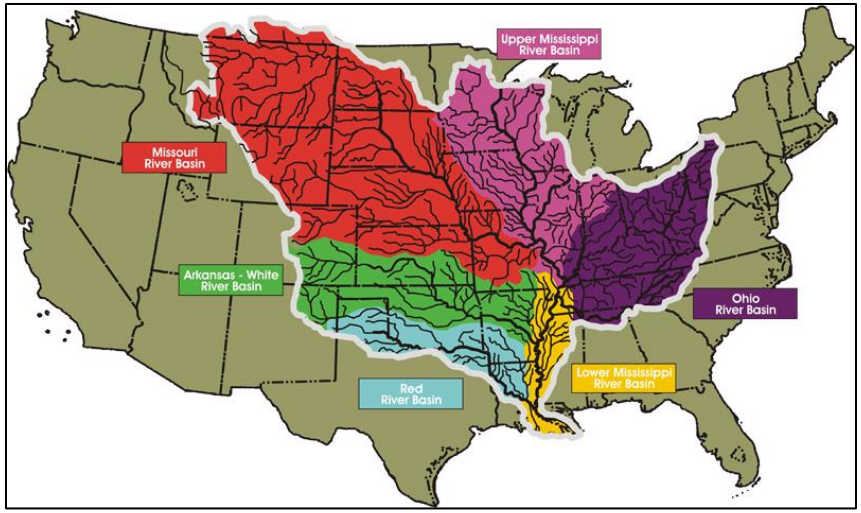
- EPA's Recommended Elements
  - Prioritize Watersheds for N & P Load Reductions
  - Set watershed load reduction goals based on best available info
  - Ensure effective permits (point sources, CAFOs, storm water) in targeted/priority watersheds
  - Address nutrient pollution from agricultural areas
  - Address nutrient pollution from storm water and septics
  - Identify ways to measure and verify reductions
  - Report activities and reductions annually
  - Develop a work plan for numeric phosphorus and nitrogen criteria

Nutrient Litigation - Mississippi

2008: In July, environmental groups (Gulf Restoration Network et. al.) petitioned EPA to force 10 mainstem Mississippi River Basin states to adopt strict numeric nutrient criteria and develop TMDLs to combat the Gulf of Mexico's hypoxic "Dead Zone."

2011: In July, EPA rejected petition. More effective to build on existing work, work cooperatively with states and tribes.

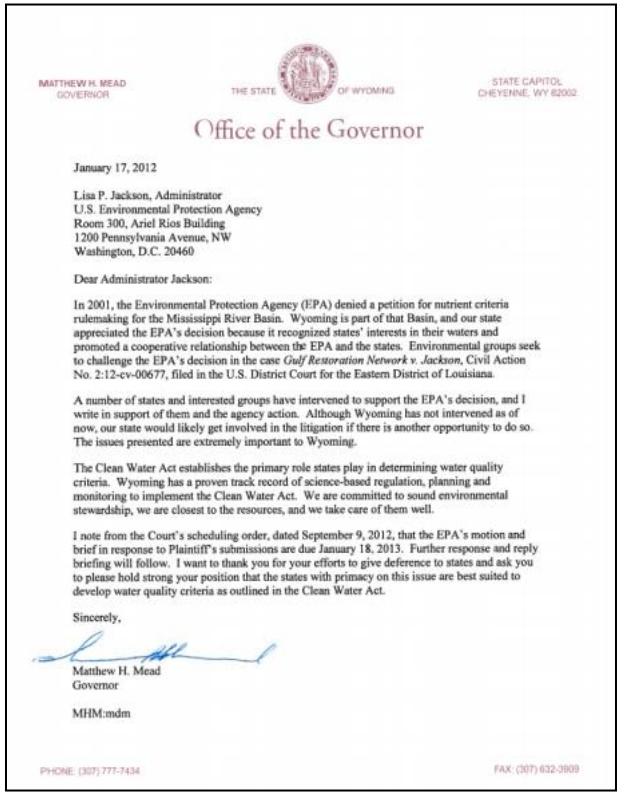
2012: In March, groups challenged EPA's rejection of the petition in Federal District Court in Louisiana.



Nutrient Litigation - Mississippi

2013: In Jan., EPA filed motion to dismiss – states are better equipped to address issue, cited economic and resource limitations of promulgating criteria.

Wyoming letter of support; EPA promotion of cooperative efforts between states and EPA



MATTHEW H. MEAD
GOVERNOR

THE STATE OF WYOMING

STATE CAPITOL
CHEYENNE, WY 82002

Office of the Governor

January 17, 2012

Lisa P. Jackson, Administrator
U.S. Environmental Protection Agency
Room 300, Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460

Dear Administrator Jackson:

In 2001, the Environmental Protection Agency (EPA) denied a petition for nutrient criteria rulemaking for the Mississippi River Basin. Wyoming is part of that Basin, and our state appreciated the EPA's decision because it recognized states' interests in their waters and promoted a cooperative relationship between the EPA and the states. Environmental groups seek to challenge the EPA's decision in the case *Gulf Restoration Network v. Jackson*, Civil Action No. 2:12-cv-00677, filed in the U.S. District Court for the Eastern District of Louisiana.

A number of states and interested groups have intervened to support the EPA's decision, and I write in support of them and the agency action. Although Wyoming has not intervened as of now, our state would likely get involved in the litigation if there is another opportunity to do so. The issues presented are extremely important to Wyoming.

The Clean Water Act establishes the primary role states play in determining water quality criteria. Wyoming has a proven track record of science-based regulation, planning and monitoring to implement the Clean Water Act. We are committed to sound environmental stewardship, we are closest to the resources, and we take care of them well.

I note from the Court's scheduling order, dated September 9, 2012, that the EPA's motion and brief in response to Plaintiff's submissions are due January 18, 2013. Further response and reply briefing will follow. I want to thank you for your efforts to give deference to states and ask you to please hold strong your position that the states with primacy on this issue are best suited to develop water quality criteria as outlined in the Clean Water Act.

Sincerely,

Matthew H. Mead
Governor

MHM:mdm

PHONE: (307) 777-7434

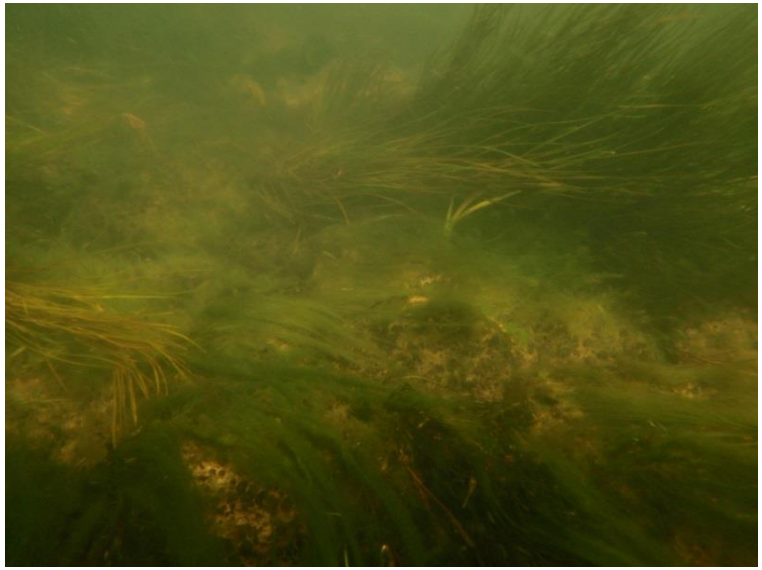
FAX: (307) 632-3909

2013: In Sept., Court ruled that EPA must issue a formal finding of "necessity", as outlined in the Clean Water Act. Gave EPA 180 days.

2014: In Feb., EPA appealed decision, requests court to reverse decision for "necessity determination" and to stay decision

What is EPA Asking Us to Do?

- FY14 (Oct. 1, 2013 – Sept. 30, 2014) Performance Partnership Agreement (PPA) with EPA
- PPA outlines state commitments to achieve public health and water quality goals for federally-delegated environmental programs (e.g., Clean Air Act, Clean Water Act)
- Maintain delegated authority of Clean Water Act in Wyoming
- 2 Nutrient Related PPA Commitments



FY14 PPA Commitments

- # of States That Have ***Adopted*** Numeric Nutrient Criteria: Nitrogen and Phosphorus for Lakes/Reservoirs and Rivers/Streams
  - In FY13, we updated nutrient criteria database and developed a plan to fill data gaps in lakes/reservoir dataset
  - In FY13, we conducted monitoring specifically for development of numeric nutrient criteria
  - In FY14, we will collect additional data for numeric nutrient criteria
  - Revising *Nutrient Criteria Development Plan* (mostly timeframes)

    - Criteria for some lakes and reservoirs by ~FY16 (where we have sufficient data

    - Criteria for streams ~2020

FY14 PPA Commitments

- # States Making Progress Toward Reducing Nitrogen and Phosphorus Pollution on Watershed Basis and Establishing Nutrient Reduction Targets. Measure tracked by priority setting, setting nutrient reduction targets by watershed, and developing nutrient criteria.
  - To date, have identified 303(d) Listed waters with suspected/known nutrient impairments for nutrient reduction
    - Gillette Fishing Lake (total phosphorus) in FY13
    - Belle Fourche River (ammonia) in FY13
    - Ham's Fork (pH impairment below WWTP) expected in FY15
  - Wyoming will establish a Nutrient Work Group to assist state in prioritizing watersheds and identifying additional nutrient reduction targets.

Nutrient Work Group

- Entities impacted by and interested in nutrients in Wyoming
  - Agriculture
  - Business
  - Conservation Districts
  - Environmental Groups
  - Industry (Mining, Oil and Gas)
  - Local Governments
  - Technical Experts
  - Land and Resource Management
  - DEQ, Governor's Office, EPA
  - Water and Wastewater

Wastewater Representatives

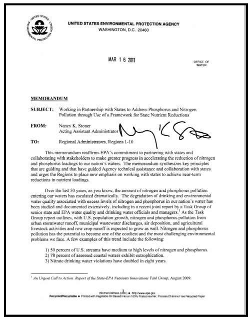
- Major Mechanical Plants
- Major Lagoon
- Minor Lagoon
- Private Lagoon System

Drinking Water

- Facilities that Use Surface Water

Nutrient Work Group

- Help DEQ address nutrient pollution in Wyoming through development of nutrient reduction strategy and numeric criteria
  - Nutrient Reduction Strategy: 7 non-criteria elements



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1

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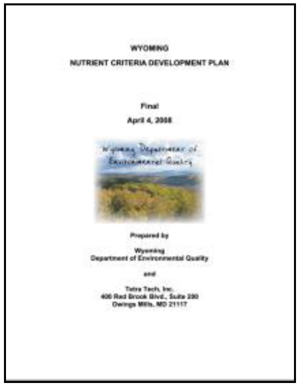
  - Criteria Development: Nutrient Criteria Development Plan, evaluate approaches, how to incorporate into standards



WYOMING
NUTRIENT CRITERIA DEVELOPMENT PLAN

Final
April 4, 2008

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  - Criteria Implementation:
    - What expectations do we want to set for wastewater facilities?
    - How to assess waters for nutrient impairments?

Questions?

Lindsay Patterson

Wyoming Surface Water Quality Standards

Lindsay.Patterson@wyo.gov

307-777-7079